


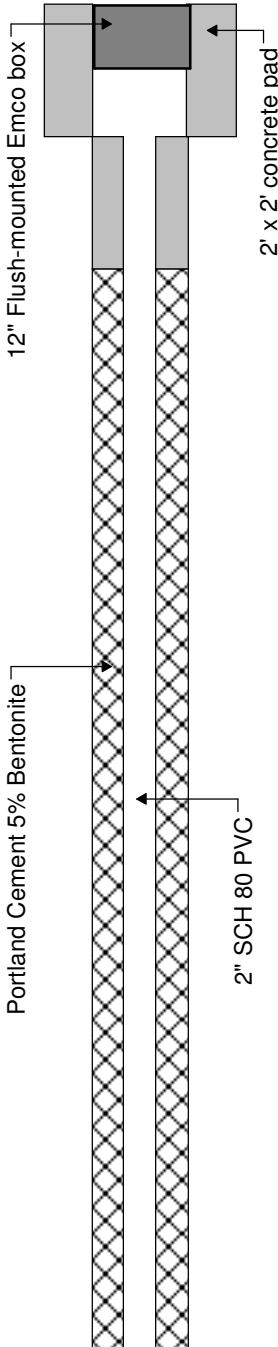



# Well Number: MW-31

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**Client:** U.S. EPA  
**Project:** Omega Chemical OU2  
**Location:** Whittier Frontage Road  
**Project Number:** 335392.FI.01

**Driller:** Tricounty Drilling  
**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
0					Ground Surface Concrete	0		Hand auger to 5' bgs
0					<b>SANDY SILT (ML)</b> dark yellowish brown (10 YR 4/4), moist, 60% fines, 40% fine sand	0		
0.1								
0.3								
5	1140	0.3						
2.2/5								
1.6								
10						10		



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**Client:** U.S. EPA  
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**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
					as above, trace subangular gravel as quartz and granodiorite, 0.2 to 2 inches			
			3.5/5					
		0.3						
		0.1			<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), 40% fine sand, 30% medium sand, 20% fines, 10% coarse sand, angular to subrounded, quartz grains, trace gravel as granodiorite	13		
					<b>LEAN CLAY (CL)</b> dark brown (10YR 3/3), moist, 85% fines, 15% fine sand, soft, low plasticity			
15	1203	0.0						1210:stop drilling
								1255: resume drilling
			4/5					
					<b>SANDY LEAN CLAY (CL)</b> dark yellowish brown (10YR 3/4), dry, 70% fines, 30% fine sand, firm, low plasticity, trace gravel as quartz, granodiorite, some gravel polished and rounded, some gravel angular to subangular, gravel 0.8 to 1.5 inches	18		
20	1300	0.1				20		



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**Client:** U.S. EPA  
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**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
					as above, except gravel is ~2 inches			
			3/3.5					
			0.1			23		
			0.3		<b>POORLY GRADED GRAVEL (GP)</b> light gray (5 Y 7/2), dry, 100% cobbles, 3 inches diameter, subrounded to subangular, Fe-oxide staining on fractures	24		
			1.5/1.5		<b>WELL GRADED GRAVEL WITH SAND (SW)</b> dark yellowish brown (10YR 4/6), dry, 70% gravel, subrounded to rounded, diorite and quartz, 0.2 to 2 inches, 20% coarse sand, 10% medium sand, loose	25		
25			0.7		<b>SANDY SILT (ML)</b> dark yellowish brown (10YR 3/6), 70% fines, 30% fine sand, hard	26		
			0.7			26		
			0.1		<b>WELL GRADED SAND WITH GRAVEL (SW)</b> dark yellowish brown (10YR 4/4), dry, 40% fine gravel, subangular to subrounded, some polished, granodiorite, 0.1 to 0.4 inches, 30% coarse sand, 20% medium sand, 10% fine sand	28		
			0.6		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), dry, 70% fines, 30% fine sand, soft	29		
			2.3		as above, very dark brown (7.5YR 3/3), trace highly weathered granodiorite gravel, 0.2 inches	30		
			0.7		<b>WELL GRADED SAND (SW)</b> pale brown (10YR 6/3), dry, 50% coarse sand, 30% medium sand, 20% fine sand, angular to subrounded			
30	1400	0.3				30		short sample run from 20'-23.5' bgs due to gravel at 23.5'



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**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
35					<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), dry, 60% fine sand, 40% fines, loose			
	0.2					31		
	0.1				<b>WELL GRADED SAND WITH GRAVEL (SW)</b> dry, 40% coarse sand, 25% fine to coarse gravel, subangular to subrounded, 0.1 to 2 inches, granodiorite, 20% medium sand, 15% fine sand, loose	32		
	4.1/5				<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), dry, 60% fine sand, 40% fines, loose			
	0.7				as above, hard trace gravel, rounded sandstone and subangular granodiorite	33		
	0.2				as above, dark yellowish brown (10YR 3/4), dry, 80% fine sand, 20% fines, trace fine gravel, granitic, up to 0.2 inches	35		
	0.4				<b>WELL GRADED GRAVEL WITH SAND (GW)</b> 60% fine to coarse gravel, angular to subrounded, 0.1 to 3 inches, granite to granodiorite, 30% coarse sand, 5% medium sand, 5% fine sand, loose	37		
	4/5							
40	0.5				<b>SILTY SAND (SM)</b> brown (10YR 4/3), dry, 65% fine sand, 35% fines, hard	39		
	0.1					40		



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**Client:** U.S. EPA  
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**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
					as above, dark yellowish brown (10YR 4/4), dry, 75% fine sand, 25% fines, micaceous, loose			
		0.2	4/5		as above, trace gravel, subrounded, 0.1 to 0.2 inches, quartz, granodiorite	42		
45	1505	0.2			as above, dark yellowish brown (10YR 4/4), dry, 80% fine sand, 20% fines, trace gravel, subrounded, 0.1 to 2 inches	45		
			2.2/5					
50	1530	0.5				50		



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**Client:** U.S. EPA  
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**Driller:** Tricounty Drilling  
**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
					as above, hard			1530, stop drilling
			3.8/5					1600, resume drilling
		0.2			as above, dark yellowish brown (10YR 4/4), dry, 60% fine sand, 20% fines, 10% fine gravel, subrounded, quartz, 10% coarse sand	54		
55	1610	2.6						
		1.5			as above, yellowish brown (10YR 5/4), dry, 60% fine sand, 40% fines	57		
		2.5/5			<b>SILTY SAND WITH GRAVEL (SM)</b> dark yellowish brown (10YR 3/6), dry, 60% fine sand, 25% fines, 15% fine gravel, subangular to subrounded, 0.1 to 0.2 inches			
60	1635	0.1				60		



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**Client:** U.S. EPA  
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**Driller:** Tricounty Drilling  
**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
65	0723	0.2	0.1		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), moist, 60% fine sand, 40% fines			9/1/09, 1635, stop drilling at 60' bgs for the day
			4.1/5		<b>SILTY SAND WITH GRAVEL (SM)</b> dark yellowish brown (10YR 4/4), moist, 50% fine sand, 35% fines, 15% gravel, angular, 0.1 to 1.5 inches, possible calcium carbonate stringer	62		9/2/09, 0714, begin drilling for the day
			0.1		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), moist, 60% fine sand, 40% fines, trace gravel, angular, 0.1" in diameter, possible calcium carbonate stringer	64		
			2/5		as above, 60% fine sand, 40% fines, soft	65		
70	0745	0.2				70		



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**Client:** U.S. EPA  
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**Driller:** Tricounty Drilling  
**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
75	0807	0.2	4.3/5		<b>SANDY SILT (ML)</b> brown (10YR 4/3), moist, 60% fines, 40% fine sand, soft, nonplastic, calcium carbonate stringers, abundant stringers at 70.5'-71', 71.6'-72.4', 73.3'-73.8', trace gravel, subrounded, granodiorite, 1 inch	75		
80	0832	0.2	3.6/5		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), moist, 70% fine sand, 30% fines, trace gravel, subrounded, 0.1 inches, quartz and granodiorite, soft, stringer of calcium carbonate 77.4'-77.6'	80		





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**Client:** U.S. EPA  
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**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing		Drilling Comments
	Time	PID (ppm)	Recovery (ft)						
			3.3/5		as above, no gravel, calcium carbonate stringers, abundant calcium carbonate stringers from 82.2'-82.7'				
85	0855	0.6			as above, dry, 75% fine sand, 25% fines, stringers of calcium carbonate	85			
					as above, yellowish brown (10YR 5/4), abundant calcium carbonate stringers	87			
			3.8/5		as above, few calcium carbonate stringers	87			
90	0930	0.3				90			



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**Client:** U.S. EPA  
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**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
95	1009	0.3	5/5		<b>SILTY SAND (SM)</b> as above, yellowish brown (10YR 5/4), moist, 80% fine sand, 20% fines, stringers of calcium carbonate			0935, stop drilling  0952, resume drilling
					as above, dark brownish yellow (10YR 4/4), moist, 70% fine sand, 20% fines, 10% gravel, subangular to subrounded, 0.1 to 0.2 inches, granodiorite, stringers of calcium carbonate	94		
					as above, dark yellowish brown (10YR 4/4), 70% fine sand, 15% fines, 10% coarse sand, quartz, 5% gravel, subrounded, 0.2 inches, quartz, few calcium carbonate stringers	95		
					<b>SILTY GRAVEL WITH SAND (GM)</b> dark yellowish brown (10YR 4/4), moist, 70% gravel, subrounded, 0.2 to 1 inch, quartz and granite	97		
					<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/4), moist, 85% fine sand, 15% fines, stringers of calcium carbonate as above, mottled dark yellowish brown (10YR 4/4) and very dark grayish brown (10YR 3/2), no stringers as above, dark yellowish brown (10YR 3/4), moist, 85% fine sand, 15% fines, trace gravel, subrounded, 0.1 inches, quartz	98		
100	1028	0.8				100		



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**Client:** U.S. EPA  
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**Drilling Method:** HSA CME-75 with 8" augers  
**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
					as above, dark yellowish brown (10YR 3/6), wet, 75% fine sand, 15% fines, 10% gravel, subrounded, 0.1 inches, quartz			
		0.5			<b>WELL GRADED GRAVEL WITH SAND (SW)</b> dark yellowish brown (10YR 3/6), wet, 70% gravel, subrounded, 0.1 to 1 inches, granite and granodiorite, 20% coarse sand, 10% medium sand, trace fine sand	102		
			3.9/5		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/6), wet, 70% medium sand, micaceous, quartz, 15% fines, 10% fine sand, 5% coarse sand			
105	1045	0.5			as above, dark yellowish brown (10YR 3/4), wet, 85% fine sand, 15% fines, trace gravel, subrounded, 1 inch, granodiorite	105		
		0.8			<b>SILTY GRAVEL WITH SAND (GM)</b> dark yellowish brown (10YR 3/6), wet, 60% gravel, subrounded, 0.2 to 2 inches, granodiorite, 25% fine sand, 15% fines	107		
			2.7/5		<b>SILTY SAND (SM)</b> dark yellowish brown (10YR 3/4), wet, 85% fine sand, 15% fines, trace gravel, subrounded, 1 inch, granodiorite	108		
					<b>WELL GRADED GRAVEL WITH SAND (GW)</b> dark yellowish brown (10YR 4/6), wet, 70% gravel, subangular to subrounded, 0.1 to 2 inches, granodiorite, 15% coarse sand, 10% medium sand, 5% fines			
110		1.9				110		



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**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
115	1115	0.9	2.2/5		<b>POORLY GRADED SAND (SP)</b> dark yellowish brown (10YR 4/6), wet, 60% coarse sand, angular to subrounded, mainly quartz and feldspars, few diorite, 15% gravel, 0.1 to 4 inches, 10% medium sand, 10% fines, 5% fine sand			1115, stop drilling 1210, resume drilling
					<b>SILTY SAND WITH GRAVEL (SM)</b> dark yellowish brown (10YR 4/6), wet, 45% medium sand, 20% gravel, 0.1 to 4 inches, quartz and granodiorite, 20% coarse sand, 15% fines	111		
					<b>WELL GRADED SAND WITH GRAVEL (SW)</b> dark yellowish brown (10YR 4/6), wet, 65% coarse sand, angular to subrounded, quartz, feldspars, granodiorite, 20% gravel, subrounded, 0.1 to 1.5 inches, granodiorite, 10% medium sand, 5% fines	112		
	1115	2.1	1.5		<b>WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)</b> dark yellowish brown (10YR 4/6), wet, 60% gravel, angular to subrounded, granodiorite and diorite, 0.1 to 1 inch, 30% coarse sand, 10% fines	115		
					<b>POORLY GRADED SAND WITH GRAVEL (SP)</b> dark yellowish brown (10YR 4/6), wet, 70% coarse sand, 15% gravel, subangular to subrounded, diorite, granodiorite, quartz, 15% medium sand	117		
					<b>SILTY SAND WITH GRAVEL (SM)</b> dark yellowish brown (10YR 4/6), wet, 40% fine sand, 20% gravel, angular, highly weathered diorite, 15% coarse sand, 15% fines, 10% medium sand	117		
	1230	0.4	0.6		<b>BOULDER</b> boulder, granodiorite to diorite	118		
						118		
						119		
120	1230	0.4				120		



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**Sampling Method:** Core  
**Logged by:** E. Bryant  
**Start/Finish Date:** 9/1/09 to 9/2/09

Depth (ft)	Sample Info			Graphic Log	Soil Description	Depth (ft)	Well Drawing	Drilling Comments
	Time	PID (ppm)	Recovery (ft)					
125					<b>POORLY GRADED SAND WITH GRAVEL (SP)</b> dark yellowish brown (10YR 4/6), wet, 50% coarse sand, 20% gravel, subrounded, 0.1 to 1.5 inches, quartz, granodiorite, 5% medium sand, 5% fines <b>SILTY SAND (SM)</b> dark yellowish brown (10YR 4/6), wet, 30% medium sand, 30% fine sand, 25% coarse sand, 15% fines <b>POORLY GRADED SAND WITH GRAVEL (SP)</b> dark yellowish brown (10YR 4/6), wet, 50% coarse sand, 20% gravel, subrounded, 1 to 2 inches, quartz, granodiorite, 5% medium sand, 5% fines <b>POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM)</b> dark yellowish brown (10YR 4/6), wet, 40% coarse sand, 25% gravel, subrounded to subangular, diorite, 15% medium sand, 10% fine sand, 10% fines <b>POORLY GRADED SAND WITH GRAVEL (SP)</b> dark yellowish brown (10YR 4/6), 50% coarse sand, 25% medium sand, 20% gravel, angular to subrounded, quartz, granodiorite, feldspars, 5% fines <b>SILTY SAND WITH GRAVEL (SM)</b> dark yellowish brown (10YR 4/6), wet, 70% fine sand, 15% gravel, subangular, 0.1 to 0.2 inches, diorite, 15% fines	122	 5' Sump - 8" borehole	1310, stop drilling TD: 126' bgs
		0.5				122		
		0.1	4.4/5			122		
1248								
130					End of Log	126		